Serviceability

Computer systems are often evaluated in terms of Reliability, Availability, and Serviceability. Reliability is the probability that a component or system will perform a task for a specified period of time. Availability is measured as the percentage of time that a system is functioning and usable. Serviceability, the focus of this article, is the ease with which the hardware and software features of a system facilitate maintenance and repair functions.

Serviceability is important because it directly affects the Total Cost of Ownership (TCO). The TCO includes the purchase price, cost of administration and the cost of maintenance. The goal of serviceability is to ensure that normal maintenance and repair functions have a minimal impact on uptime and productivity. In today's 7 day x 24 hour world, many mission critical services simply cannot be brought down for scheduled (and unscheduled) maintenance.

To facilitate serviceability, server systems must have certain traits that reduce the cost of maintenance and administration. These include;

- Redundancy
- Flexibility
- Expandability
- Accessibility

Let's take a look at each of these traits.

Redundancy

Within all systems there are certain hardware components which upon failure, could potentially bring the entire system down. These are often called single points of failure. Hardware which has been identified as a potential point of failure should have built in redundancy along with management software that enables reconfiguration around failed components. An added feature of the software should be the capacity to initialize an automatic service call to the vendor or in-house support organization thereby reducing unplanned downtime.

Many potential failures can be avoided by simply over-engineering the appropriate hardware. Certain components such as fans and drives may be designed to operate below their rated capacity, thereby reducing the possibility of failure and ensuring that backup components are robust enough to handle an increased load should a first line component fail.

Flexibility

Systems need to be open by utilizing industry-standardized architecture in order to be considered flexible. Many systems in the past were proprietary, locking the customer into a particular vendor and preventing the inclusion of legacy hardware and software systems.

Backward compatibility is another way some systems ensure flexibility. By being backwardly compatible, the customer retains the value of previous investments and gains a greater return on the investment in new systems.

Flexible servicing includes software functionality for remote support. The goal of remote support is to reduce server downtime by reducing the need for a support technician or system administrator to travel to the site location. The remote software must support both in-band and out-of -band communications. In-band is defined as communications with a server utilizing an operational network link. Out-of-band involves communication with the server via a phone line or modem connection.

Software wizards and configuration tools can minimize the time required to setup a system. These tools can walk the technician or administrator through installation and configuration processes, thereby reducing the expertise required for system administration.

Expandability

As databases grow in size and rich media files push the limits of server I/O, the server administrator must be able to add new processing power, memory, and storage capacity without impacting existing users. With hot swap capability, customers can add and replace major components such as fans, drives, PCI cards and other peripherals on-line. System administrators use this functionality to both repair and expand their systems without impacting existing users.

Accessibility

Don't forget the basics like the physical accessibility of the system. Attention to detail can be seen in the ease of access to components, proper power and data cabling, and the use of standardized hardware (nuts, bolts, and screws). These real-life, day-to-day considerations should not be forgotten. Inattention to these details reflects poor planning and poor engineering.

In conclusion, serviceability can be said to be a vital part of the reliability and availability of a computer system. It is hard to imagine having one without the other. Mission critical applications must work around the clock. Today, time truly does equal money, and serviceability equals both.

Key points

- The goal of serviceability is to reduce the cost of ownership by reducing the downtime required for maintenance and repair.
- Redundant components such as fans, drives, and peripherals are a key feature of serviceability.
- Hot swap capability is a must for on-line servicing.
- Remote support reduces the need for on site technical expertise.
- Physical accessibility to components reflects good planning and engineering.